

CLAIMS

1. An analyzing cartridge having a plurality of reservoirs and a capillary connected for communication between these
5 reservoirs, characterized in that at least one of said reservoirs is provided with openings leading to the outside of the analyzing cartridge, at least one of the openings is covered with gas-permeable/non-liquid-permeable vents, and the analyzing cartridge is provided therein with reagents for
10 use in analysis.
2. The analyzing cartridge according to claim 1, characterized in that said reagent is provided in at least one of said reservoirs provided with said openings covered with said vents.
- 15 3. The analyzing cartridge according to claim 1 or 2, characterized in that at least a part of said reagent is deprived of fluidity.
4. The analyzing cartridge according to any of claims 1 to 3, characterized in that said vent is composed of a hydrophobic
20 member having pores.
5. The analyzing cartridge according to claim 4, characterized in that said hydrophobic member having pores is a hydrophobic porous membrane.
6. The analyzing cartridge according to claim 5,
25 characterized in that said openings of a plurality of reservoirs are covered with a common hydrophobic porous membrane to form respective vents, and for said hydrophobic

porous membrane, the portions located between reservoirs are deprived of porosity.

7. The analyzing cartridge according to claim 6, characterized in that for said hydrophobic porous membrane, the portions located between reservoirs are deprived of porosity by applying pressure to the portions.

8. The analyzing cartridge according to any of claims 1 to 7, characterized in that said analyzing cartridge comprises a sample storing reservoir for storing a liquid sample, a diluent storing reservoir for storing a diluent for diluting said sample, a measuring reservoir for measuring said sample, and a diluting reservoir for mixing said diluent with said measured sample to dilute the same, and

that said capillary is connected for communication between said measuring reservoir and said sample storing reservoir, said diluent storing reservoir and said diluting reservoir, respectively.

9. The analyzing cartridge according to any of claims 1 to 7, characterized in that said analyzing cartridge comprises a calibration solution storing reservoir for storing a calibration solution for calibrating the result of analysis, and a sample storing reservoir for storing a liquid sample, a diluent storing reservoir for storing a diluent for diluting said calibration solution and said sample, a measuring reservoir for measuring said calibration solution and said sample, and a diluting reservoir for mixing said measured calibration solution or said measured sample with said diluent to dilute the same, and

that said capillary is connected for communication between said measuring reservoir and said calibration solution storing reservoir, said sample storing reservoir, said diluent storing reservoir and said diluting reservoir, respectively.

- 5 10. A method of producing the analyzing cartridge according to any of claims 1 to 9, characterized by comprising:

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10 a plane plate processing step of providing through-holes at the positions corresponding to said reservoirs of a plane member and providing a groove at the position corresponding to said capillary of one plate face of the plane member;

a vent forming step of covering with said vent the plate face of said plane member that does not have said groove;

15 a reagent introducing step of introducing said reagent into said through-hole corresponding to the reagent storing reservoir for storing said reagent, from the plate face of said plane member having said groove; and

a covering step of covering with a cover sheet the plate face of said plane member having said groove to form said reservoir and said capillary.

- 20 11. A method of producing the analyzing cartridge according to claim 4 or 5, characterized by comprising:

25 a plane plate processing step of providing through-holes at the positions corresponding to said reservoirs of a plane member and providing grooves at the position corresponding to said capillary of one plate face of the plane member;

a vent forming step of covering the plate face of said plane member that does not have said groove with said

hydrophobic member having pores or said hydrophobic porous membrane;

5 a reagent introducing step of introducing said reagent into said through-hole corresponding to the reagent storing reservoir for storing said reagent, from the plate face of said plane member having said groove; and

a covering step of covering with a cover sheet the plate face of said plane member having said groove to form said reservoir and said capillary.

10 12. A method of producing the analyzing cartridge according to claim 3, characterized in that after the solution of said reagent is stored in said reservoir provided with said vent, the solution of said reagent is deprived of fluidity by drying the same.

15 13. The method of producing the analyzing cartridge according to claim 12, characterized by comprising:

20 a plane plate processing step of providing through-holes at the positions corresponding to said reservoirs of a plane member and providing grooves at the position corresponding to said capillary of one plate face of the plane member;

a vent forming step of covering the plate face of said plane member that does not have said groove with a hydrophobic member having pores or a hydrophobic porous membrane;

25 a reagent introducing step of introducing the solution of said reagent into said through-hole corresponding to the reagent storing reservoir for storing said reagent, from the plate face of said plane member having said groove, and

depriving the solution of the reagent of fluidity by drying the same; and

a covering step of covering with a cover sheet the plate face of said plane member having said groove to form said
5 reservoir and said capillary.

14. A liquid feed control device that is attached to the analyzing cartridge according to any of claims 1 to 9 and controls the feeding of a liquid between said any reservoirs via said capillary, characterized by allowing or regulating
10 the entry/exit of a gas via said vents, thereby letting said liquid flow into said reservoirs or letting said liquid flow from said reservoirs via said capillary.

15. The liquid feed control device according to claim 14, characterized by comprising valves placed in positions
15 opposite to said reservoirs with said vents therebetween, in which the entry/exit of the gas via said vents is allowed or regulated by the valves.

16. The liquid feed control device according to claim 14, characterized by comprising couplers placed in the positions
20 opposite to said reservoirs with said vents therebetween, and attached to said vents in such a manner as to cover said openings, pumps coupled to said couplers, and valves placed between said couplers and said pumps, in which the entry/exit of the gas via said vents is allowed or regulated by at least one of said
25 pump or said valve.

17. The liquid feed control device according to any of claims 14 to 16, characterized by allowing or regulating the entry/exit of the gas to said reservoirs of which openings

are not covered with said vents, thereby controlling the outflow of said liquid from said reservoirs via said capillary.

18. A method of analyzing a sample using the analyzing cartridge according to claim 3, characterized by comprising:

5 a reagent dissolving step of feeding a reagent dissolving liquid from a reagent dissolving liquid storing reservoir in which said reagent dissolving liquid for dissolving said non-fluid reagent is stored to the reagent storing reservoir in which said non-fluid reagent is stored through said
10 capillary, and dissolving said non-fluid reagent to prepare a reagent solution immediately before analysis is carried out.

19. The method according to claim 18, characterized by comprising a mixing/reacting step of mixing and reacting together said sample which is liquid and said reagent solution
15 in said reagent storing reservoir using said capillary.

20. A method of analyzing a sample using the analyzing cartridge according to claim 8, characterized by comprising:

a sample measuring step of measuring said sample by feeding said sample from said sample storing reservoir into said
20 measuring reservoir; and

a sample diluting step of feeding said diluent from said diluent storing reservoir into said measuring reservoir, thereby feeding said diluent and said sample in said measuring reservoir into said diluting reservoir to mix said sample and
25 said diluent together to dilute said sample.

21. A method of analyzing a sample using the analyzing cartridge according to claim 9, characterized by comprising:

a calibration solution measuring step of measuring said calibration solution by feeding said calibration solution from said calibration solution storing reservoir into said measuring reservoir;

5 a calibration solution diluting step of feeding said diluent from said diluent storing reservoir into said measuring reservoir, thereby feeding said diluent and said calibration solution in said measuring reservoir into said diluting reservoir to mix said calibration solution and said diluent together to dilute said calibration solution;

10 a calibration solution analyzing step of reacting said diluted calibration solution with said reagent to obtain the value measured by analysis of said diluted calibration solution;

15 a sample measuring step of measuring said sample by feeding said sample from said sample storing reservoir into said measuring reservoir;

a sample diluting step of feeding said diluent from said diluent storing reservoir into said measuring reservoir, thereby feeding said diluent and said sample in said measuring reservoir into said diluting reservoir to mix said sample and said diluent together to dilute said sample;

20 a sample analyzing step of reacting said diluted sample with said reagent to obtain the value measured by analysis of said diluted sample; and

a calibrating step of calibrating the value measured by analysis of said sample using the value measured by analysis of said calibration solution.